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10/544,204	08/02/2005	Sherif Makram-Ebeid	FR 030010	8412

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER
KOZIOL, STEPHEN R

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/21/2006*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 August 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-SB/08) Paper No(s)/Mail Date *11/21/2006*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

Detailed Action

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

2.   Claims (1-11 and 13) are rejected under 35 U.S.C. 102(e) as being anticipated by Gondek

et al. US 2003/0026495 A1, hereinafter Gondek.

Regarding claim 1 Gondek discloses an image processing system for generating a

multidimensional adaptive oriented filter to be applied to the point intensities of an image formed

in a number d of dimensions (see Gondek pars. 0016-0022), comprising: analyzing means

comprising means (5, f.sub.i) to estimate at each image point a probability measure (F.sub.i) of

the presence of a type of feature of interest and to determine from said probability measure a

weighting control model (10) yielding a weighting control vector (11, V.sub.c) for the user to

control synthesized adaptive kernels at each image point (see Gondek par. 0022); and

synthesizing means for generating filter kernels at each image point adapted to the type of the

features of interest, which filter kernels are controlled by the weighting control vector (see

Gondek par. 0024-0027 and 0049).

Regarding claim 2 Gondek discloses the image processing system of claim 1, wherein the synthesizing means comprises means for generating: filtering means called "pre-mixing filtering means" comprising combining means (30, X_H) dependent on the type of the image features having inputs for the weighting control vector (11, V_c) and the image data [$I(x)$] and having an output for weighted adaptive kernels (35, H) adapted to the type of the image features to produce the filtered image signal [$H(x)$] (see Gondek par. 0026-0028).

Regarding claim 3 Gondek discloses the image processing system of claim 1, wherein the synthesizing means comprises means for generating: filtering means called "post-mixing filtering means" comprising both isotropic and anisotropic filtering means [15, g_i)] applied independently of the type of the image features, whose outputs (G_i) are combined at each image point and adapted using the weighting control vector (11, V_c) to produce the filtered image signal [$G(x)$] (see Gondek par. 0024 for isotropic filters and par. 0025 for filters that behave anisotropicly, e.g. sharpen in one direction and smooth in the orthogonal direction).

Regarding claim 4 Gondek discloses the image processing system of claim 1, wherein the analyzing means comprises a number m of operators ($f_1, \ldots, f_i, \ldots, f_m$), which outputs at each current point of the image a probability value ($F_1, \ldots, F_i, \ldots, F_m$) of presence of features of interest among the m types of different features in the image to be filtered (see Gondek par. 0022-0028).

Regarding claim 5 Gondek discloses The image processing system of claim 1, wherein the analyzing means comprises a combining operator (10, X_u) , called user operator, which receives at its input the m probabilities ($F_1, \ldots, F_i, \ldots, F_m$) of presence of different types of features for forming the weighting control model, which provides at its outputs the control vector (V_c) of k components ($C_1, \ldots, C_i, \ldots, C_k$), for controlling the adaptive kernels of the synthesized filters (see Gondek par. 0022-0028).

Regarding claim 6 Gondek discloses the image processing system of claim 1, wherein the features of interest are chosen among anisotropic features and isotropic features (see Gondek par. 0024 for isotropic filters and par. 0025 for filters that behave anisotropicly, e.g. sharpen in one direction and smooth in the orthogonal direction).

Regarding claim 7 Gondek discloses the image processing system of claim 6, wherein the synthesizing means comprises, in the "pre-mixing filtering means", a combining operator (30, X_H), which receives at its input, the control vector V_c and the image data I(x) and which provides at its output an adaptive kernel (H) that is adapted to the orientation of the anisotropic oriented features and/or to the dimensions of the isotropic features to be filtered or enhanced by the weighting parameters defined by the control vector (V_c) (see Gondek par. 0022-0028).

Regarding claim 8 Gondek discloses the image processing system of claim 6, wherein the synthesizing means comprises, in the "post-mixing filtering means", a number m of different

filtering means (g.sub.1, . . . , g.sub.i, . . . , g.sub.m), which are applied independently of the types of the features examined in the image, whose number m corresponds to the number m of features of different types to be processed and whose outputs (G.sub.1, . . . , G.sub.i, . . . , G.sub.m) are mixed in a combination operator (X.sub.G), which is controlled by the control vector (V.sub.c) to produce the filtered image signal [G(x)] (see Gondek par. 0022-0028).

Regarding claim 9 Gondek discloses the image processing system of claim 8, wherein the combination operator (X.sub.G) is a weighted sum of the results of the different filtering means (g.sub.1, . . . , g.sub.i, . . . , g.sub.m) (see Gondek par. 0040-0042).

Regarding claim 10 Gondek discloses the image processing system of claim 2, wherein a user control interface (158) is provided for the user to control the weighting parameters (C.sub.1, . . . , C.sub.i, . . . , C.sub.k) of the control vector (V.sub.c); for selecting the "pre-mixing filtering means" and/or the "post-mixing filtering means"; for varying the strength of filtering or enhancement related to the different type of features at the output of the combination operator (X.sub.G) while combining the results (G.sub.1, . . . , G.sub.i, . . . , G.sub.m) to produce the filtered image signal [G(x)] in the "post-mixing filtering means"; and/or at the input of the combination operator (X.sub.H) in the "pre-mixing filtering means" (see Gondek figure 3 and par. 0022-0028).

Regarding claim 11 Gondek discloses an image processing method for generating a

multidimensional adaptive oriented filter to process image data, using a system as claimed in

claim 1 (see Gondek par. 0016-0022, 0024-0027, and 0049).

Regarding claim 13 Gondek discloses a computer program product comprising a set of

instructions for carrying out the method as claimed in claim 11 (see Gondek par. 0016-0022,

0024-0027, and 0049).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating obviousness
            or nonobviousness.

5.   Claim (12) is rejected under 35 U.S.C. 103(a) as being unpatentable over Gondek et al.

US 2003/0026495 A1 in view of Roth US 5,805,236.

Regarding claim 12 Gondek discloses a system as claimed in claim 1 further comprising a user

control means (158) for selecting weighting parameters and/or acting on the user operator (10)

and/or the selection unit (40) (see Gondek par. 0016-0022, 0024-0027, and 0049). Gondek fails

to disclose a medical examination apparatus comprising a display system and means to acquire

the image data as claimed in claim 1. However, Roth does disclose use of a medical examination

apparatus and display for the gathering of d-dimensional input image data (see Roth figure 1

item 38 for a display device and col. 2 lines 37-56 which describe use of at least the following

medical imaging modalities: a magnetic resonance imaging (MRI) system, an ultrasound (US)

device, a computer aided tomography (CT) scan system or any other medical or non-medical

digital imaging systems that images an object of interest. Therefore it would have been obvious

to a person having ordinary skill in the image processing arts to combine Gondek's

multidimensional image filtering system with Roth's various medical imaging modalities to

arrive at a probabilistic, feature-sensitive, medical image filtering system with a display.

Examiner's Note

6.   The referenced citations made in the rejection(s) above are intended to exemplify areas in

the prior art document(s) in which the examiner believed are the most relevant to the claimed

subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s)

in its/their entirety since other areas of the document(s) may be relied upon at a later time to

substantiate examiner's rationale of record. A prior art reference must be considered in its

entirety, i.e., as a whole, including portions that would lead away from the claimed invention.

W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983),

cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one

alternative does not constitute a teaching away from any of these alternatives because such

disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re

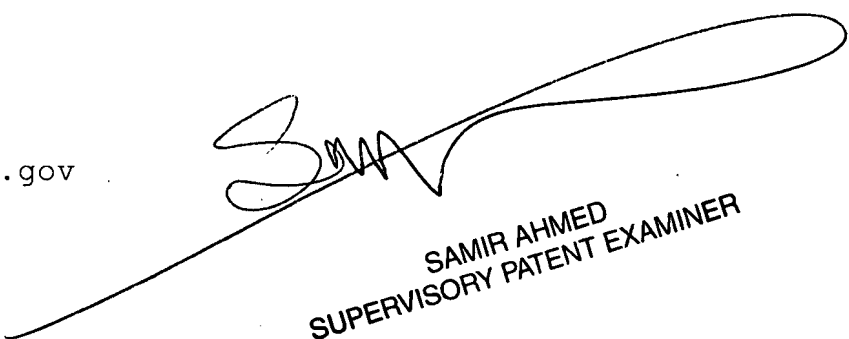Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Contact

7. .   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Koziol whose telephone number is (571) 270-1844. The examiner can normally be reached on M - alt. F 8:00-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached at (571) 272-7413 . Customer Service can be reached at (571) 272-2600. The fax number for the organization where this application or proceeding is assigned is (571) 273-7332.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Stephen R Koziol/
Desk: (571) 270-1844
Fax: (571) 270-2844
Stephen.Koziol@uspto.gov

SAMIR AHMED
SUPERVISORY PATENT EXAMINER